GOVERNMENT OF INDIA
ATOMIC ENERGY
LOK SABHA

UNSTARRED QUESTION NO:539
ANSWERED ON:20.07.2016
Disposal of Nuclear Waste
Singh Deo Shri Kalikesh Narayan

Will the Minister of ATOMIC ENERGY be pleased to state:

(a)the amount of nuclear waste being generated from various nuclear power installations in the country and the method of nuclear waste disposal being followed;

(b)the details of sites that are being used for nuclear waste disposal;

(c)whether an environmental assessment has been carried out for sites being used for nuclear waste disposal and if so, the details thereof and if not, the reasons therefor;

(d)whether there are any environmental repercussions associated with the current method of nuclear waste disposal and if so, the details thereof and the action the Government proposes to take in this regard; and

(e) whether the Government has identified/is identifying a deep geological repository for storage of future waste and if so, the details thereof and if not, the reasons therefor?

Answer

THE MINISTER OF STATE FOR, PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND PRIME MINISTER"S OFFICE (DR. JITENDRA SINGH):

(a)A comprehensive radioactive waste management system is established taking into account the operational capability for the management of radioactive waste and an independent regulatory capability for its overview. The radioactive solid wastes generated during operation and maintenance of nuclear power plants are segregated and volume reduced prior to its disposal. Disposal of waste is carried out in specially constructed structures such as stone lined trenches, reinforced concrete trenches and tile holes. These disposal systems are designed on multi-barrier principle for ensuring effective containment of radioactivity. The areas where the disposal structures are located are kept under constant surveillance with the help of bore-wells laid out in a planned manner. This policy is on par with international practices following the guidelines of International Atomic Energy Agency (IAEA). The quantity of low and intermediate level waste to be stored at site is about 0.15 cubic meters/year/MW.

(b)The low level radioactive solid waste generated during O & M of nuclear power plants and other nuclear facilities is disposed in specially constructed structures such as stone lined trenches, reinforced concrete trenches and tile holes within the boundary of facilities after volume reduction. These disposal facilities are co-located near reactor/nuclear facilities to avoid transportation of radioactive waste through public domain.

(c) Environmental survey laboratories (ESLs) are installed at all atomic power plant / radioactive waste management sites. ESLs carry out pre-operational survey around the plant site up to a distance of 30 km radius to establish the pre-operational baseline radioactivity levels around the site. During operation period, environmental samples such as air, water, soil, vegetations, agricultural produces, milk, meat and other dietary products are collected periodically and analyzed for radioactivity to assess the impact of operation of the plant on the surrounding environment and the public. ESLs are equipped with highly sensitive instruments and sufficient infrastructure to analyze extremely low levels of radioactivity in environmental samples. The radioactivity levels in environmental samples are compared with pre-operational values in the respective matrix to ensure that there is no unacceptable build up of radioactivity in the surrounding environment.

(d)No, Sir. The current method of nuclear waste disposal is at par with international practices and there are no environmental repercussions associated with current method of nuclear waste disposal.

The studies carried out at various power stations / waste management sites have clearly indicated that there is no unacceptable build up of radioactivity in the environment. The annual dose computed to the general public are also well below the limits prescribed by regulatory body and well below the dose due to natural background. Hence the operation of the atomic power plants / waste management plants does not lead to any adverse impact on environment.

(e)A closed nuclear fuel cycle is being followed in India, where, spent fuel is reprocessed and most of the component of spent fuel is recycled as a fuel for future reactors. However, a small volume of residual waste containing fission products and minor actinides are left, which is termed as High level radioactive liquid waste. This waste is converted into glass through a process, called vitrification. The vitrified waste is stored for an interim period in a Solid Storage Surveillance Facility (SSSF) for cooling prior to its eventual disposal in underground geological disposal facility. This policy is on par with international practices following the guidelines of

International Atomic Energy Agency (IAEA). With the advent of new technologies based on partitioning of waste, where long - lived radioactive waste constituents are separated prior to immobilizing them in the glass matrices, the need of underground geological disposal facility will reduce to a great extent and is not foreseen in near future. The long lived radio isotopes is planned to be burnt in fast reactors or Accelerator Driven Sub Critical systems to get it converted into short- lived species. Main fission products like Cs-137 & Sr-90 present in the waste are recovered using in house developed technologies and deployed for societal applications covering medical applications, external irradiators and other medical applications. This is accomplished for the first time in the world by India, where radioactive waste is regarded as a useful by-product.

*****